

XX. *Descriptions of a new species of RAPHIDIA, L., and of three new species of Trichoptera from the Balkan Peninsula, with critical remarks on Panorpa gibberosa, McLach.* By Professor FRANZ KLAPÁLEK, F.E.S.

[Read June 6th, 1894.]

PLATE X.

IN the second half of July and the first half of August, 1893, I made a journey in Bulgaria and East Roumelia, the results of which are published in the Magazine for Art and Science, edited by the Bulgarian Ministerium for Cultus and Education. To make the descriptions of the new species also accessible to Non-Slavic Naturalists, I have the permission of the editors of that magazine to publish them simultaneously in a foreign periodical, and having the honour to be a member of the Entomological Society of London, I take the liberty to present the English text.

Raphidia rhodopica, n. sp.

Head black, oval, narrowed gradually to the collum, deeply punctate, the punctures having an appearance of transversal ridges. Front black, shining. Ocelli distinct. Antennæ at the base testaceous, darker to the apex, which is wholly black. The smooth median longitudinal space on the collum and occiput black, with a distinct longitudinal impressed line. Labrum fuscous, testaceous on the margins. Mandibulæ testaceous, blackish at the tips. Palpi maxillares fuscous, galeæ testaceous. Labium fuscous, with exception of two very distinct yellow, triangular spots. Palpi labiales shining black. The underside of the head black, more sparingly punctured than above, with a longitudinal groove in the middle, which becomes broader towards the mouth. Collum moderately long, a little narrower behind.

Prothorax $\frac{2}{3}$ th shorter than the head and collum, narrowed in the first third, broader behind. Pronotum punctured, and transversely rugose, with short pubescence, black, the anterior edge narrowly yellowish and the hind angles yellow. Mesothorax black, on the notum anteriorly with a distinct rhombic yellow spot; on the sides

before the base of the wings is a small oblong yellow spot ; the scutellum has in the middle a yellow point, hinder edge narrowly reddish-brown.

Coxæ and trochanters black ; on the anterior and middle femora the base and outside, except a short space on the apex, is black, the innerside, except the base and the apex, yellowish-brown. Posterior femora with exception of the yellowish-brown apex black. Tibiæ yellowish-brown, tarsi yellowish-brown, fuscous at the apex. Abdomen shining black, with a narrow yellow lateral line ; the intermediate segments narrowly margined with yellow posteriorly at the sides, and on the middle of the posterior margin beneath. The 7th abdominal segment short, the 8th divided into a dorsal and ventral valve ; the first of them is longer than the foregoing segment, quadrangular if viewed from the side, under the thickened side margins swollen on either side into a shining black smooth hemispheric lobe ; the ventral valve, directed downward, has the apical margin notched, thickened and fuscous.

On the innerside of this valve lie two testaceous crotchets directed against the apical margin and slightly curved inwardly. Under these crotchets lies the penis, which is canaliculated beneath. The 9th segment is widely opened and slightly notched on the hindmargin, which is yellow ; the hinder angles strongly thickened and beset with black spines.

Anterior wings three times as long as broad, with elliptical apex, pellucid. Two cells along the radius from the origin of the sector and three discoidal cells. Costal area dilated in the first third, with 11-12 simple veinlets. Subcosta joins the costa at a distance from pterostigma equal to two-thirds of its anterior margin. Pterostigma trapezoid, dark-brown, with a single simple veinlet parallel with its outer margin ; its inferior margin scarcely half the length of the superior. First discoidal cell begins at the same distance before the pterostigma as is the termination of the subcosta, and extends very little beyond its hindmargin. Four cubital cells. First apical vein simply furcated ; the second thrice furcated ; the third divided into two branches ; the fourth furcated twice ; and the two next following are divided into three branches.

Posterior wings in the costal area with 8-10 transverse veinlets. Cubitus with one branch anteriorly, and in the area between the sector radii and the anterior branch of cubitus there is only one transverse veinlet.

♀ unknown.

Exp. 23·5-25 mm., long. 11·5 mm.

By the structure of wings *R. rhodopica* is near to *R.*

schneideri, Ratzb. and *R. sericea*, Albarda, from which it differs by the dark brown pterostigma, by the relative length of the first discoidal cell, and by the form of the genital parts. These are similar to those of *R. major*, Burm., from which it differs by the single cross veinlet in the pterostigma and by four cubital cells.

I collected two ♂ on bushes along the road from Philipopol to the monastery Bela Cerkva, 30th July.

Polycentropus excisus, n. sp.

Similar to *P. flavomaculatus*, Pict., in general appearance, but the antennæ are yellow, the apex only annulated indistinctly with brownish. Palpi and legs yellow, and the markings on the anterior wings are pale yellow; the footstalk of the apical fork No. 3 is at least half so long as the fork.

In the ♂ the dorsal plate is almost quadrangular, slightly excised on the apex. Superior appendages a little longer than the dorsal plate, broad. Viewed from the side their upper margin is rounded and the lower almost straight. From above they are quadrangular, with rounded exterior apical angle. Their base is covered above by a large triangular lobe joined to the base of the dorsal plate. Intermediate appendages short, reddish-brown, escaping from beneath the apical angles of the dorsal plate, curved down, but their tip turned again upward. Inferior appendages a little shorter than the superior, concave inwardly and convex outwardly with deeply excised apical margin. Both the upper and lower edge are so far turned inwardly that they touch each other, forming, in this way, a tube opened at the apex.

♂ unknown.

Exp. 15 mm., length 5 mm.

I would not have dared to describe this species from the single ♂ collected in Bojana, near Sophia, 20th July, had not the form of the appendages been so very characteristic.

Tinodes unidentata, n. sp.

Body black, clothing black mingled sparingly with testaceous. Antennæ fuscous, very indistinctly and narrowly annulated. Legs brown or fuscous, trochanters and knees testaceous. Anterior wings blackish, sparingly covered with black pubescence. Neuration distinct, similar to that of *T. dives*, Pict.; posterior wings similar in colour to the anterior, not iridescent. Fringes blackish grey.

In the ♂ the dorsal plate from side is elongate, slightly convex above at the base, with parallel upper and lower margins, the lower being obliquely arched upward at the apex. Superior appendages $2\frac{2}{3}$ as long as the dorsal plate, slender, slightly dilated towards the base, slightly curved downward and covered with blackish hairs. Intermediate appendages curved downward, bearing on the apex short thin spines and furnished on the underside before the apex with few slender long backward spines and with a feeble spine arising from the underside and curved downward, but with the apex again turned upward in form of the letter S. Inferior appendages two-jointed, 1st joint short, quadrangular, the 2nd much broader, elongately quadrangular, bearing on the middle of the apical edge a strong upwardly curved tooth. The exterior of these appendices, except the dorsal and apical margin of the second joint, is covered with black fine hairs, the apex of the second joint is furnished with dense straight strong setæ, which almost conceal the apical tooth. Between the base of these appendages arises the shining, reddish-brown, spiniform penis, which is arcuate and with its apex turned downward between the appendices. The colour of all appendices in specimens preserved in alcohol is testaceous except the basal half of the inferior appendages, which is fuscous; in dry specimens the colour is fuscous, the apex of inferior appendages only being shining testaceous.

♀ similar to that of *T. dives*, Pict. Exp. ♂ 9·5—11 mm.; ♀ 11—12 mm.

This species, most resembling *T. dives*, Pict., is easily distinguishable by the uniform blackish wings, the slender superior appendages, the simple spiniform penis and the single tooth on the apical edge of the inferior appendages of the ♂.

Frequents the rapid streams on the slopes of the Vitosă Mountain near Sophia, Bojana, 20th July.

Rhyacophila obtusa, n. sp.

Fuscous, head and pronotum clothed with golden yellow hairs. Antennæ uniformly fuscous, with dense short pubescence. Palpi fuscous. In the legs the coxæ are fuscous, the rest testaceous, tarsi fuscous to the apex; spurs brown and therefore very distinct. Wings short and broad, anterior with an almost semi-circular apex. Membrane smoky-grey, uniformly densely covered with golden-brown pubescence, mingled only very sparingly with blackish hairs; on the posterior the pubescence is thinner and

black. Pterostigma of all four wings distinct greenish brown. Neuration distinct, dark brown; radius not furcated before the apex; second apical fork extending only very little further inwardly than No. 1; costal margin of the anterior wings furnished, at its base only, with plumose hairs amongst the simple. Fringes dark grey.

In the ♂ the 9th abdominal segment on the dorsal and ventral side distinctly developed, though its ventral part is considerably narrower. The external lobes are very large, reaching to the middle of the inferior appendages, viewed from side rhomboid, with the lower part bent round outwardly. If viewed from above, the external margin appears to form a raised arcuate edge disappearing at the apex and forming an axis round which the lower part of the lobe is bent outwardly. Both lobes are united at the base, but separated for more than the apical half of their length; they are sparingly furnished with stiff hairs. First joint of the inferior appendages oblong, convex on its lower edge; second joint much shorter, very obliquely truncate at the apex, so that the upper edge is much shorter than the lower, which is concave at the base, convex at the considerably produced apex; the apical edge straight. Lower penis-cover not exerted, large, boat-shaped, fuscous, and slightly excised at the apex. Exp. 16 mm., length 5.5 mm.

♀ unknown.

Three ♂ at a brook in Dragalevci flowing from the Vitosā Mountains near Sophia, 22nd July.

When living this species has the appearance of a pale *Silo* or *Lithax*, and was found sitting on the underside of leaves of plants on the bank. Though its radius is not divided at the apex, we must put it into the *Section C.* of the genus *Rhyacophila* (McLach., Rev. and Syn., p. 158), from its short and broad wings and the form of the anal appendices. Though the external lobes appear very similar to those of *Rh. eatoni*, McLach., the lower penis-cover and the uniform colour of the wings show its relation to the group of *Rh. lævis*, Pict., from which it differs especially in the form of the external lobes and by the presence of the plumose hairs on the costal margin of the anterior wings.

Panorpa gibberosa, McLach.

This highly interesting species was described by Mr. McLachlan in his Synopsis of the species of *Panorpa* occurring in Europe and the adjoining countries (Trans.

Ent. Soc. 1869, Part I.) from one ♂ and ♀ ; but since that time, as the author has kindly informed me, it has not been seen by him. I hope, therefore, it will not be out of place to give some critical remarks on it, as I have been so fortunate as to collect a series of specimens in two separate localities in Bulgaria and Eastern Roumelia. The most important characters in which this species differs from *P. germanica*, L., to which it is very nearly allied, are in the furca ("appendices segmenti 9," McLach.), whose branches are longer and have their apex obliquely truncate and in the larger process of the third dorsal segment. The wing markings are similar to those of *P. germanica*, var. *apicalis*, St. Two of my specimens are quite typical, agreeing with the description and figures in all but in the dorsal process of the 3rd abdominal segment, which does not appear larger than in *germanica*. From this species they differ, besides the other characters named above, by the shining black occiput, the brown colour which covers regularly the whole occiput in *P. germanica* is limited to the hinder eye margins. Abdominal segments 7th and 8th marked on either side by a large black shining spot; furca fuscous, almost black at the apex, with dense strong black setæ; on the rostrum are two very distinct shining black lines. Another specimen agrees in all respects with the first two, but the pterostigma is only yellowish without the usual dark-brown spot, instead of which it has a little point at the base of the sector and two similar below the pterostigma. Two other specimens agree with the last, but have in the pterostigma a dark brown spot, which is smaller than in typical examples. A series of specimens are in the markings similar to *P. germanica*, but the anal parts are those of *gibberosa*. One most aberrant example is smaller, very dark, having the 7th and 8th abdominal segments wholly shining black; the wings are transparent, very shining, with a slight greenish and brownish tinge; the spots are conspicuous, and, besides the above-named, we find two dark brown points below the middle of the anterior margin of the wings. A series of ♀ show no difference from those of *P. germanica* collected on the mountains of the Bohemian frontier. They are very dark, and with conspicuously marked wings. I do not hesitate to identify these examples, at least the first named five, with *P. gibberosa*, McLach., and I am inclined to

hold this species distinct from *P. germanica*, but to have absolute certainty, we must wait for more materials; it would be especially desirable to ascertain whether the typical *P. germanica* occurs in those regions; the season when I visited them was rather advanced. The difference between *P. germanica* and *gibberosa* is indeed very slight, but yet greater than between *P. communis*, L., and *P. vulgaris*, Imhoff, which, after all, are only two forms of one species.

EXPLANATION OF PLATE X.

- FIGS. 1—4. *Raphidia rhodopica*, n. sp. 1. Wings. 2. Head. 3. Apex of the ♂ abdomen from side. 4. The same from behind.
- FIGS. 5 & 6. *Pauorpa gibberosa*, McLach. 5. Terminal segments beneath. 6. Apex of abdomen from side.
- FIGS. 7 & 8. *Polycentropus excisus*, n. sp. 7. Apex of the abdomen of ♂ from above. 8. The same from side.
- FIG. 11. *Tinodes unidentata*, n. sp. 9. Apex of abdomen of the ♂ from above. 10. The same from side. 11. Apex of abdomen of the ♀.
- FIGS. 12 & 13. *Rhyacophila obtusa*, n. sp. Apex of abdomen of the ♂. 12. From above. 13. From below.
- [Figs. 1, 2, enlarged $\frac{6}{7}$; Figs. 3, 4, $\frac{1}{2}$; Fig. 5, $\frac{1.8}{7}$; Fig. 6, $\frac{2}{7}$; Figs. 7, 9, 10, $\frac{5.5}{7}$; Figs. 8, 11, 12, and 13, $\frac{4.0}{7}$. All drawn with camera lucida.]

